Instructional Materials Evaluation Criteria – Pre-algebra / Math 7

Title _____ **ISBN#** _____

Established Track Record? YES ☐ NO ☐
If yes, please list research source(s):

Meets National Mathematics Standards? YES ☐ NO ☐

Standard 1: Students will expand number sense to include operations with rational numbers.

Objectives	Indicators	Covered? Yes	Covered? No	Explanation of Coverage	Percentage of Coverage
Objective 1.1: Represent rational numbers in a variety of ways.	a. Write a whole number in expanded form using exponents.				
	b. Change whole numbers with exponents to standard form and recognize the any number to the 0 power is 1.				
	c. Demonstrate multiple ways to represent whole numbers, decimals, fractions, percents, and integers using models and symbolic representations.				
	d. Use scientific notation to represent numbers greater than one.				
	e. Choose the most appropriate form of a rational number for a given context.				
Objective 1.2: Compare and order rational numbers, including positive and	a. Identify, read, and locate rational numbers on a number line.				

negative fractions, mixed numbers, and decimals.	b. Compare and order rational numbers, including comparisons between fractions and decimals, decimals and percents, and fractions and percents.				
Objective 1.3: Explain relationships and equivalencies among rational numbers.	a. Find equivalent forms for common fractions, decimals, percents, and ratios including repeating or terminating decimals.				
	b. Recognize and use the identity properties of addition and multiplication, the multiplicative property of zero, and the commutative and associative properties of addition and multiplication.				
	c. Recognize and use the inverse relationships of addition and subtraction, multiplication and division, and perfect squares and their roots.				
	d. Predict the relative effect of operating among fractions, decimals, percents, and integers.				
Objective 1.4: Model and illustrate meanings of operations and describe how they relate.	a. Relate fractions, multiplication, and division to make sense of procedures for multiplying and dividing fractions.				
	b. Compare ratios to determine if they are equivalent.				
	c. Compare ratios using the unit rate.				
	d. Recognize percents as ratios				

	based on 100 and decimals as ratios based on powers of 10.				
	e. Use the properties of addition and multiplication to develop mental math strategies				
Objective 1.5: Solve problems involving rational numbers.	a. Compute fluently, using all four operations, with integers and positive fractions and decimals.				
	b. Use factors, multiples, prime factorization, relatively prime numbers, and common divisibility rules to solve problems.				
	c. Solve application problems involving rational numbers.				
	d. Check the reasonableness of results using estimation.				
Objective 1.6: Solve problems involving proportional reasoning.	a. Solve ratio and rate problems using simple reasoning about multiplication and division.				
	b. Solve percent problems using ratio and proportion, including problems involving discounts, interest, taxed, tips, and percent increase or decrease.				
	c. Solve problems about similar objects and figures using scale factors and the relationship of corresponding parts of similar figures.				
Standard 2: Students will use the language of algebra to represent relationships.					
Objectives	**Indicators**	**Covered? Yes**	**Covered? No**	**Explanation of Coverage**	**Percentage of Coverage**
Objective 2.1: Evaluate, simplify, and solve algebraic expressions and equations.	a. Write a variable expression to identify pattern relationships.				
	b. Translate verbal expressions				

	into algebraic expressions.				
	c. Simplify and evaluate algebraic expressions using the properties of algebra.				
	d. Verify that performing the same operation on both sides of an equation will produce an equivalent equation.				
	e. Solve simple one-step, single-variable linear equations and inequalities.				
Objective 2.2: Represent relationships using graphs, tables and other models.	a. Graph ordered pairs of integers on a rectangular coordinate system.				
	b. Identify integer coordinates when given the graph of a point on a rectangular coordinate system.				
	c. Model simple real-world problems using various representations, such as graphs, tables, equations, manipulatives, and pictures and identify extraneous information.				

Standard 3: Students will use spatial and logical reasoning to recognize, describe, and identify geometric shapes and principles.					
Objectives	**Indicators**	**Covered? Yes**	**Covered ? No**	**Explanation of Coverage**	**Percentage of Coverage**
Objective 3.1: Draw, label, and describe attributes of and relationships among geometric shapes.	a. Draw, label, and describe relationships among line segments, rays, lines, parallel lines, and perpendicular lines, including midpoint of a line segment.				
	b. Draw, label, and describe				

	attributes of angles, triangles, and quadrilaterals.				
	c. Draw, label, and describe relationships among angles, including vertical, adjacent, complementary, supplementary angles.				
	d. Draw, label, and describe attributes of prisms, pyramids, cylinders, and cones by describing them by the number of edges, faces, or vertices as well as the types of faces.				

Standard 4: Students will understand and apply measurement tools, formulas, and techniques.					
Objectives	**Indicators**	**Covered? Yes**	**Covered ? No**	**Explanation of Coverage**	**Percentage of Coverage**
Objective 4.1: Apply the properties of proportionality to different units of measure.	a. Convert from one unit of measure to an equivalent unit of measure in the same system using a given conversion factor.				
	b. Use properties of similarity to create and interpret scale drawings and approximate distance on maps.				
	c. Solve problems involving scale factors using ratios and proportions.				
	d. Solve problems involving rates and measures.				
Objective 4.2: Determine measurements using appropriate tools and formulas.	a. Estimate metric and customary measures using everyday objects and comparisons.				
	b. Measure length, area, volume, and angles to appropriate levels				

	of precision.				
	c. Use formulas to calculate the perimeters, circumferences, areas, and volumes of everyday objects.				

Standard 5: Students will draw conclusions using concepts of probability after collecting, organizing, and analyzing a data set.					
Objectives	**Indicators**	**Covered? Yes**	**Covered ? No**	**Explanation of Coverage**	**Percentage of Coverage**
Objective 1: Design investigations to reach conclusions using statistical methods to analyze data.	a. Design investigations to answer questions.				
	b. Extend data display and comparison to include scatter plots and circle graphs.				
	c. Compare two similar sets of data on the same graph and compare two graphs representing the same set of data.				
	d. Propose and justify inferences and predictions based on data.				
Objective 5.2: Use basic concepts of probability to predict and compare the results of various experiments. **.**	a. Write the results of a probability experiment as a fraction, ratio, or percent between zero and one.				
	b. Compare experimental results with anticipated result.				
	c. Compare individual, small group, and large group results for a probability experiment.				

Curriculum Coverage	**3**	**2**	**1**	**0**	**N/A**
Meets Core Standards and Objectives	80% of the state core objectives are covered. Objectives in instructional materials are clearly stated with measurable outcomes.	70% of the state core objectives are covered. Objectives in instructional materials are clearly stated with measurable outcomes.	50% of the state core objectives are covered.	Less than half of the state core objectives are covered.	
Content	Accurate information reflecting current mathematical knowledge. No content bias.	Some inaccuracies found, however information reflects current mathematical knowledge. No content bias.	Many inaccuracies were found on major mathematical concepts or content bias created problems with mathematical concepts.	Major inaccuracies found in mathematical content or concepts.	
Covers Process Skills	Materials support and encourage students to use mathematical process skills (i.e., problem solving, communication, reasoning and proof, connections, representation).	Materials provide a range of activities with set outcomes. Process skills are mentioned but not incorporated into instructional process.	Materials provide a set of explicit step-by-step instructions. Limited amount of process skills mentioned.	No hands-on activities. No process skills mentioned.	
Age Appropriate	A wide range of activities to accommodate various developmental levels at a reasonable pace and depth of coverage. Includes age appropriate cross-curricular references (e.g., literature, software, etc.) Content organized so prerequisite skills and knowledge are developed before more complex skills.	Some activities are adaptable to the appropriate age level. Some cross-curricular activities are given. Some attention given to prerequisite skills and knowledge.	Limited developmentally appropriate activities. Prerequisite skills and prior knowledge are not sufficiently developed before more complex concepts are introduced.	Age appropriate issues are not addressed. Several activities are not based on appropriate levels.	
Pedagogically Sound	Facilitates a wide range of teacher and student activities that reflect various learning styles and individual needs of students. Includes a wide variety of pedagogical strategies for flexible grouping and instruction.	Encourages and assists teachers in addressing learning styles and individual needs of students. Includes various pedagogical strategies for flexible grouping and instruction.	Addresses differences in learning and teaching to a limited degree. Includes some pedagogical strategies for flexible grouping and instruction.	Hinders effective pedagogy.	

Physical Qualities	**3**	**2**	**1**	**0**	**N/A**
Durability	Materials are securely bound and reinforced.	Materials are hardbound adequately.	Materials have secure binding.	Materials have inferior binding.	
Print Size and legibility for intended grade level	Appropriate use of font size and format for intended grade level.	Font size adequate for intended grade level.	Font size and format too small or too large for age group.	Font size inconsistent.	
	Key words or phrases bold faced and/or italicized.	Some key words or phrases boldfaced and/or italicized.	Highlighting was used too much, emphasized too much information.	No key words or phrases boldfaced or italicized.	
Pictures, tables, and graphics	Appropriate and varied pictures, tables, and graphs. Graphs and tables are correctly labeled (e.g., titles, keys, labels).	Limited pictures, tables, and graphs. Some tables and graphs are not labeled correctly.	Very limited pictures, tables, and graphs.	Inappropriate pictures, tables, and graphs.	
Includes table of content, glossaries, and index	Tables of contents, indices, glossaries, content summaries, and assessment guides are designed to help teachers, parents/guardians, and students. Clearly represents concepts within the text.	Tables of contents, indices, glossaries, content summaries, and assessment guides are designed to help teachers, parents/guardians, and students, are adequate but not clearly defined concepts within the text.	Simple tables of contents, indices, glossaries, content summaries, and assessment guides are included.	Is missing one or more of the following: simple table of contents, glossaries, content summaries, assessment guides, or indices.	
Ancillary Materials	**3**	**2**	**1**	**0**	**N/A**
Teacher Materials	Lesson plans are easy to understand and implement. Are clearly written and presented with accurate concepts.	Most lesson plans are easy to understand and implement. Are clearly written and presented with accurate concepts.	Lesson plans are difficult to understand.	No lesson plans.	
	Mathematical terms and academic vocabulary are appropriately used.	Generally mathematical terms and academic vocabulary are appropriately used.	Some mathematical terms and academic vocabulary are appropriately used.	There is a lack of mathematical terms and academic vocabulary.	
	Incorporates integration suggestions to other curriculum areas.	Most integration supports other curricular areas.	Some integration support for other curricular areas.	No integration support available.	
	Investigations and problem solving activities focus on demonstrating mathematical principles in the content area.	Most investigations and problem solving activities focus on demonstrating mathematical principles in the content area.	Limited investigations and problem solving activities focus on demonstrating mathematical principles in the content area.	Investigations and problem solving activities are not related to content area or no investigation activities.	

Ancillary Materials cont.	**3**	**2**	**1**	**0**	**N/A**
Student Materials	Activities engage students in purposeful mathematics.	Most activities engage students in purposeful mathematics.	Some activities engage students in purposeful mathematics.	Activities do not develop the concept studied.	
	Activities incorporate use of process skills (i.e., problem solving, communication, reasoning and proof, connections, representation) for deep understanding of mathematical principles.	Activities encourage the use of process skills for deep understanding of mathematical principles.	Activities mention the use of process skills for deep understanding of mathematical principals.	Activities do not encourage process skills for deep understanding of mathematics.	
	Includes ideas to extend concepts in real world applications.	Some ideas are included to extend concepts in real world applications.	Limited real world applications.	No real world applications suggested.	
Parent Materials	Homework assignments and activities support classroom learning and are written so that parents/guardians can help their children.	Suggested strategies and activities to assist parents/guardians.	Limited activities available for parent/guardian use.	No parent/guardians activities included.	
	ESL strategies and activities that support classroom learning are provided in materials sent home to parents.	Some ESL strategies and activities are provided in materials sent home to parents.	A few ESL strategies and activities that may be sent home to parents are provided.	No ESL strategies and activities are provided.	
Manipulatives	Manipulatives are provided and are appropriate.	Manipulatives are provided.	Manipulatives are not provided.	Manipulatives are not part of the program.	
	Manipulatives can be replaced economically and locally.	Manipulatives can be replaced locally or by mail order.	Needed manipulatives can be obtained locally or special ordered.		
Technology (teachers)	**3**	**2**	**1**	**0**	**N/A**
Ease of Use	Menus are easy to read and follow.	Menus are generally easy to read and follow.	Menus are easy to read. Might have to read manual to understand operation of technology. (e.g., laser remote, software.)	Menus are not very descriptive. Hard to follow.	
	User-friendly installation requires a minimal level of computer expertise.	Installation requires little computer expertise.	Installation requires some knowledge or expertise.	Installation requires expertise.	
	Manual and directions are understandable.	Manuals and directions are simple.	Manuals are included.	No manuals or written instructional materials are provided.	

Technology (teachers) cont.	**3**	**2**	**1**	**0**	**N/A**
Audio/Visual attributes	High quality audio and visuals are correct and contribute to overall effectiveness of program.	Audio and visuals are of good quality. Complements program effectiveness.	Audio and visuals are acceptable. Aligned with program content.	Audio and visual defects are apparent. Distracts from program content.	
	Information is current and up-to-date.	Information is current.	Information is mostly current.	Information is out-of-date.	
Enhances learning experience	Enhances learning experience. Adds depth and diversity.	Offers some additional depth and diversity to learning experience.	Mild impact to overall learning experience.	Does not impact learning experience.	
Technology (students)	**3**	**2**	**1**	**0**	**N/A**
Calculator	Appropriate activities and materials are provided to explore and prove conjectures.	Activities help students learn use to use calculator to explore concepts	Activities to learn to use calculators	No use of calculators or calculators used to check work only.	
Computer	Software allows students to explore and prove mathematical conjectures	Software allows students to explore math conjectures	Software demonstrates processes for mathematical applications	Drill and practice only	
Universal Access	**3**	**2**	**1**	**0**	**N/A**
Content accurately reflects diverse population	Provides ways to adapt curriculum for all students (e.g., special needs, learning difficulties, English language learners, advanced learners.)	Provides some ways to adapt curriculum to meet assessed special needs.	Provides limited strategies to assist special needs students.	Inappropriate strategies to assist special needs students.	
	Accurate portrayal of cultural, racial, and religious diversity in society.	Mostly accurate portrayal of cultural, racial, and religious diversity in society.	Does not address diversity in society.	Inaccurate portrayal of diverse populations and society.	
Assessment	**3**	**2**	**1**	**0**	**N/A**
Provides a variety of assessment options	Multiple measurements of individual student progress at regular intervals ensuring success of all students.	Assessment requires students to apply some concepts.	Assessment requires students to apply few concepts.	Provides only paper and pencil assessment.	

Assessment cont.	**3**	**2**	**1**	**0**	**N/A**
Assessment tools	Scoring tools and rubrics in assessment package.	Some scoring tools and rubrics provided.	Very few assessment tools are provided.	Answer keys to paper and pencil assessments.	
Assessment alignment to objectives	Assessment is provided to assess 80% of stated objectives with a variety of assessment strategies and items.	Assessment is provided to assess 70% of stated objectives.	Assessment is provided to assess 50% of stated objectives.	Assessment is provided to assess less than 50% of stated objectives.	
Assessment for understanding	Assessment requires the application of ideas and concepts.	Assessment requires the application of some ideas and concepts.	Assessment requires the application of few ideas and concepts.	No application of ideas and concepts.	